

2001 Herbaceous Perennial Trial Results

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Introduction--New Developments in 2001.

As herbaceous perennials become increasingly popular with the gardening public, the rush to provide such plant material for the market often perpetuates the misnomer of winter hardiness. Many, but not all, perennial breeder/producer/distributor companies initiate trialing in northern zones. Frequently these only include Z5-Z6 in their scope. Other new releases from herbaceous perennial breeders are listed with zone-specific hardiness that was derived from published information for the original species. Usually the hardiness of these new releases is never scientifically validated, over years, prior to release due to the rapid pace and competitiveness of the annual bedding and perennial plant markets.

Unlike annuals that complete their life cycle without the need to over-winter, winter hardiness of herbaceous perennials is of particular importance to home gardeners and other consumers. The name perennial denotes the assumption that the product will be winter-hardy and flower year-after-year. Consumers have become wary after disappointing performance of products that did not meet the minimum expectations. For instance, *Gaura lindheimeri* 'Siskiyou Pink', 'Whirling Butterflies' are hardy to Z6 yet every year consumers find these being retailed as "hardy" plants in Z3-4 regions; most "hardy mums" sold on the market are also not hardy north of Z5, with the notable exception of select releases from the University of Minnesota breeding program.

The annual bedding plant industry companies in the United States test material at their secure trial sites, as well as in the national network of All America Selections (AAS) testing locations. Such national testing provides breeder, producer, distributor, grower, and retailer companies with data to select plant material with wide adaptation across the nation or specific regions, e.g. the south (heat/drought tolerant plants) or north (cool crops for fall/spring sales).

The trials conducted in Minnesota are the first systematic, scientific, public trialing system to evaluate winter hardiness and garden performance of herbaceous perennials. Our trials are unique by testing replicated samples of seed and/or vegetatively-propagated products for a duration of three years (three growing seasons and three winters). A national test system for herbaceous perennial plants has not existed. Individual companies may have organized public and/or private trialing of perennials. For instance, Blooms of Bressingham Perennials™ N.A. (Lapeer, MI) conducts performance evaluations and hardiness tests for each year's new releases. This provides a gauge of performance/hardiness across various regions, although none are as rigorous as the Minnesota Z3-4 test sites.

We have been trialing herbaceous perennials to test for winter hardiness and garden performance since 1998. This year we are delighted to have two sites in USDA Z3 join in the trials. Our new Z3 trial coordinators are Georgianna Mesenbring and Libby Wilkes, both Master Gardeners. Their trial garden sites are along the northern corridor of Lake Superior. The Lutsen site is on the edge of Lake Superior while the Grand Marais site is further inland and higher in elevation than Lake Superior. These two sites should provide different environments to evaluate winter hardiness and performance for Z3 gardeners.

Commencing with the 2001 season, AAS has begun a new trial category, the Multi-Season trials. These trials are for frost-tolerant annuals, biennials, or perennials. Their Multi-Season trials will be conducted over two growing seasons (beginning with 2001-2002), with the primary evaluation occurring in the second season. This trial is restricted to seed-propagated products. We applaud this addition to the AAS national trials.

Another new development this past year was the introduction of a new concept for hardy perennials: Smart Codes. Smart Codes would serve as a "defining source of unified code zones

for all plants" (H. Marc Cathey, President Emeritus, American Horticultural Society). The Smart Codes will provide a unified coding system for winter hardiness zones, heat zones, the lowest temperature needed to satisfy chilling requirements (to break dormancy), number of days the plants can survive temperatures >86F, number of days of heat required to complete its growth cycle water, as well as other factors essential for growth (relative humidity, light, pH). The American Horticultural Society, in cooperation with private industry partners (e.g. Goldsmith Seed Co., Monrovia Nursery, Flower Fields, etc.) are working with PlantAmerica to create an online plant database with the Smart Codes. Watch for news of the Smart Codes database in the future.

Another important development in 2001 relates to the importance of invasiveness in herbaceous perennial crops:

- The Perennial Plant Association now has an Environmental Committee (Invasives) focusing on issues relating to the creation and distribution of ornamentals that either are, or could become, invasive crops. <http://www.perennialplant.org/>
- Industry representatives have applied for membership on the U.S. Invasive Species Council Advisory Committee. This committee will play a pivotal role in national legislative initiatives concerning invasive species. <http://www.invasivespecies.gov/>
- A new center for research on invasive species has been created by the University of Minnesota: the Invasion Biology Research Consortium (IBRC). The IBRC serves as a "think-tank" to spawn new research into invasion biology across disciplines. A series of workshops, with international speakers, are planned in the next two years. Several researchers of horticultural crops (including herbaceous perennials) are involved in the IBRC. Visit the IBRC website for further details: <http://mnibrc.agri.umn.edu/>

The remaining new developments in herbaceous perennials are the 2001 data contained in this report. Fortunately, the winter of 2000-2001 was more "severe" and provided the best test winter since beginning our trials in 1998. We can report that the 2000 Perennial Plant of the Year, *Scabiosa columbaria* 'Butterfly Blue', is not hardy in Minnesota--both Z4 and Z3/4 test sites had 0% winter survival. Other perennials that had survived in previous years also succumbed during the past winter. This season culminates the first round of 3-year planting evaluations for material planted in 1998. To date, more than 90 cultivars are non-hardy (0% winter survival) in one or more hardiness zones in Minnesota.

Plant Evaluation Sites.

Five sites are incorporated into the tests; three have been established with high public visibility for exposure to consumers and Minnesota/national commercial floricultural and nursery growers/researchers, while two sites are on private land. All sites except St. Paul have sun and shade conditions. We have been testing material at St. Paul, Minneapolis, and Morris since 1998. In 2001, the Lutsen and Grand Marais trial sites were added.

Signage identifies the plant materials and the companies donating the new cultivars. Grower and home-gardener field days during the peak flowering season expose the local industry and consumers to the new introductions for on-site evaluation at St. Paul and Morris. The gardening public and growers can also rate the various plant materials on a yearly basis.

The five testing sites are as follows:

1. Department of Horticultural Science, University of Minnesota, St. Paul, MN. USDA Z4 (Winter Hardiness Zone); Z5 (Heat Zone). At this site plant material is planted in full sun.
2. Lake Harriet Gardens, Minneapolis Park and Recreation Board, Minneapolis, MN. USDA Z4 (Winter Hardiness Zone); Z5 (Heat Zone). This site includes both full sun and partial shade plantings.
3. West Central Research and Outreach Center, University of Minnesota, Morris, MN. USDA Z3/4 (borderline between Z3 and Z4 for Winter Hardiness); Z4 (Heat Zone). This site includes both full sun and partial shade plantings.
4. Private Site, Lutsen, MN. USDA Z3 (lakeside, Lake Superior); Z2 (Heat Zone). This site includes both full sun and partial shade plantings. The trials are conducted with a windbreak (a building) between the lake and the plantings.
5. Private Site, Grand Marais, MN. USDA Z3 (higher elevation and inland from Lake Superior); Z2 (Heat Zone). This site includes both full sun and partial shade plantings.

Plant Material.

Select genera have been designated for testing at all five sites, based on input from northern consumers, growers, and other horticultural professionals. Additional genera are included as new releases surface with market potential that may not have been scientifically trialed for winter hardiness.

The Perennial Plant of the Year, as determined by the Perennial Plant Association, is included in the trials, beginning with the year 2000. The Perennial Plant of the Year for 2001 is *Calamagrostis x acutiflora* 'Karl Foerster'. Next year, in 2002, the Perennial Plant of the Year is *Phlox* 'David' (Paniculata group). We have already trial 'David' in Z4 and Z3/4, where it had 75% winter survival over three years.

Plant material of particular interest are new cultivars/varieties for which winter hardiness is unknown or that will be of interest to consumers and the ornamental industry. Four plants per accession (replications) are planted at each site for evaluation. Material is planted with side-by-side comparisons at each site, although the landscape plantings differ.

Plant material trialed in the sites is neither propagated nor distributed to interested parties. Rather, all interested parties are directed to contact their distributors or the original source company (breeder/producer) directly to obtain the plant material.

Weather Conditions.

Data on monthly high, low, and average temperatures, as well as precipitation totals are included for each site. This data is generated by the University of Minnesota, Department of Soil, Water, and Climate and is available on their website:

<http://climate.umn.edu/climatology.htm>

Evaluation Criteria.

All plants (if hardy) remain at each site for three years. During each growing season, the herbaceous perennials are evaluated for various criteria. Of particular importance is winter hardiness and overall performance during and after establishment at the trial sites. The following criteria are used for evaluating the germplasm:

1. Winter hardiness
2. Disease and/or pest susceptibility, tolerance, or resistance.
3. Cultural responses to cutback, growback.
4. Plant morphology: height x width measurements, stem strength.
5. Flowering: time of 100% flowering, duration.
6. Reseeding or invasiveness: tendency to form asexual and/or sexual propagules, their dissemination, and competition with the parental source.
7. Floriculture and Nursery Industry ratings: Used to make the Minnesota Select Perennial Winners.

Year Planted.

Material is received and planted from plugs, liners, or nursery containers in the spring (May-June) of each year. All plots are irrigated to promote establishment. No fall plantings occur.

1998=Plants were planted in 1998. Thus, data included in this report is the final year of evaluation for this material for winter survival. Data is pooled over replications. In some instances, more than n=4 replications were included at one site. Data from Z4 (St. Paul, Minneapolis) sites are pooled.

1999=Plants were planted in 1999. Thus, data included in this report is the third year of evaluation for this material. After next spring's winter hardiness ratings, these plants will be removed.

2000=Plants were planted during 2000. This is the first year for winter hardiness ratings (many did not survive) and the second season for other ratings.

2001=Plants were planted during 2001. Any data included is not indicative of the accessions full potential after establishment and over-wintering. Many did not flower during the first year.

% Winter Survival.

$\% \text{ winter survival} = [\text{number of reps. surviving}] / [\text{total number of reps. per site}] \times 100.$

Calculated only for those plants that have over-wintered through ≥ 1 winter period.

Date of 100% Flowering.

Date when 100% of the replications at each site were in flower. If material reflowers, that is noted in the comments section.

Flower Stalk Strength.

Measured on a scale of 1-5, with 1-2 meaning weak/lodging; 3-5 denoting increasingly stronger stems.

Floral Display.

An indication of floral coverage over the plant surface area.

Exc=Excellent, 75-100% coverage

Gd=Good, 50-75% coverage

Fr=Fair, 25-50% coverage

Pr=Poor, <25% coverage

Height x Width.

Measured in centimeters (cm) at flowering.

Reseed or Invasive.

In second-year plantings, indicates seedlings or vegetative propagules surrounding original plants and tendency to become aggressive (taking over neighboring plantings) or invasive (spreading and establishing themselves as populations throughout the trial gardens via seed). If the cultivars were invasive, the seedlings/veg. propagules had achieved 100% cover in the plot and the original clones were difficult, if not impossible, to identify.

Comments.

Additional notes recorded during the observational year.

2001 Results.

Herbaceous perennial trial reports for 1999-2001 are available on the web at: <http://www.florifacts.umn.edu/> This is the third year of reporting winter hardiness and performance evaluations of herbaceous perennials in replicated trials (≥ 4 plants/site) in USDA Z3/4 and Z4. Before 1999 and the arrival of the herbaceous perennial breeder, the first trialing year had several difficulties. In some instances, insufficient numbers of perennials were received for planting at all three sites. As a result, some plantings at Morris (Z3/4) did not occur and data may be missing for this site for various accessions.

The weather conditions during the winters of 1998 and 1999 were extremely mild and snow cover was minimal. During the 1998 evaluation season (1998 calendar year), St. Paul & Minneapolis (Z4) had a high of 88.4F and a low of 10.7F, with a maximum precipitation of 4.6" (per month). Morris (Z3/4) had a high of 82F and a low of 4.3F with a maximum of 5.7"/month precipitation. During the 1999 evaluation period, St. Paul & Minneapolis (Z4) had a high of 96F and a low of -17F, with a high of 10.3"/month. Morris (Z3/4) had a high temperature of 94F and a low of -21F, with a maximum precipitation of 4.9"/month. During the year 2000, St. Paul & Minneapolis (Z4) experienced a high of 94F and a low of -13F with a maximal precipitation of 6.3"/month. Morris (Z3/4) had a high of 97F and a low of -20F, while the maximum precipitation was 4.5"/month. The winter season of 2000-2001 has commenced as a more typical season with normal snow cover and colder temperatures. During the year 2001, St. Paul & Minneapolis (Z4) had a high of 99F and a low of -14F with a maximal precipitation of 7.79"/month. Morris (Z3/4) had a high temperature of 98F and a low of -31F, with a maximum precipitation of 5.63"/month. Lutsen and Grand Marais (Z3) had a high temperature of 91F and a low of -13F, with a maximum precipitation of 7.45"/month.

As a consequence of the recent mild winters, the sites had less than adequate snow cover during 1998-2000. In Morris, with windier conditions, many of the trial gardens were

completely windswept of snow when the colder temperatures occurred. This may have exposed the crowns to lower soil temperatures than would occur with adequate snow cover or the crowns may have severely desiccated. This was particularly problematic in the shade garden area, potentially causing higher winterkill in *Heuchera*, *x Heucherella*, and *Tiarella*.

2001 Minnesota Select Perennial.

Several established perennials had superior performance during the 2001 season. The most popular perennial with $\geq 62\%$ winter hardiness and superior performance throughout the season is listed below. To obtain this perennial, contact your local retailer or wholesale distributor.

1. ***Fragaria sp.* 'Red Ruby'**. This is a very hardy (100%) *Fragaria* or ornamental strawberry in Z3/4 and Z4. While it is an aggressive perennial, it can be kept "in check" with barriers that prevent its spread. The colorful flowers and stems create a constant array of red in the patch. It is a wave of delightful fruit throughout the season. We harvested edible fruit in late October, prior to a freeze. The small fruit are flavorful, providing a taste sensation for anyone visiting your garden.

Hardy perennials with superior performance.

For those accessions planted **during 1998-2000 only**, the following herbaceous perennials were found to have an average of $\geq 62\%$ winter hardiness, high rankings in floral display, stem strength, and minimal invasiveness. These are highlighted with a dark background on the attached 2000 Trial Data Tables.

1. *Agastache rupestris* 'Blue Fortune' **2000 Minnesota Select Perennial.**
2. *Aquilegia x hybrida* 'Songbird Mix'
3. *Artemisia dracuncululus*
4. *A. lactiflora*
5. *A. ludoviciana* 'Silver Queen'
6. *A. ludoviciana* 'Valerie Finnis'
7. *A. schmidtiana* 'Silver Mound'
8. *Baptisia australis*
9. *Bergenia cordifolia*
10. *Fragaria sp.* 'Pink Panda'
11. *Fragaria sp.* 'Red Ruby' **2001 Minnesota Select Perennial**
12. *Geranium x cantabrigiense* 'Biokovo'
13. *G. x cantabrigiense* 'Karmina'
14. *G. macrorrhizum* 'Spessart'
15. *G. macrorrhizum* 'Ingwersen's Variety'
16. *Heliopsis helianthoides* 'Lorraine Sunshine'
17. *Hemerocallis x hybridus* 'Lady Emily'
18. *H. x hybridus* 'Lady Eva'
19. *H. x hybridus* 'Lady Jackie'
20. *H. x hybridus* 'Lady Rose'
21. *H. x hybridus* 'Lady Scarlett'
22. *H. x hybridus* 'Miss Amelia'
23. *H. x hybridus* 'Miss Mary'
24. *H. x hybridus* 'Miss Mary Mary'

25. *H. x hybridus* 'Miss Tinkerbell'
26. *Hylotelephium x hybridum* 'Autumn Joy' (formerly *Sedum*)
27. *H. x hybridum* 'Frosty Morn' (formerly *Sedum*)
28. *H. x hybridum* John Creech' (formerly *Sedum*)
29. *H. x hybridum* 'Rosy Glow'
30. *H. spectabile* 'Brilliant' (formerly *Sedum*) **1999 Minnesota Select Perennial.**
31. *Monarda didyma* 'Marshall's Delight'
32. *Monarda didyma* 'Petite Delight' **2000 Minnesota Select Perennial**
33. *Nepeta x faassenii* 'Blue Wonder'
34. *N. x faassenii* 'Dropmore'
35. *N. x faassenii* 'Walker's Low'
36. *N. sibirica* 'Souvenir d'Andre Chaudron'
37. *Phlox maculata* 'David'
38. *Stachys byzantina* 'Helene von Stein'
39. *Verbascum x hybridum* 'Southern Charm'

Hardy perennials with inferior performance.

For those accessions planted **during 1998-2000 only**, the following herbaceous perennials were found to have an average of $\geq 62\%$ winter hardiness, but low rankings in floral display, stem strength, or other characters.

1. *Dianthus barbatus*
2. *x Heucherella hybrida* 'Cranberry Ice'
3. *x H. hybrida* 'Dayglow Pink'
4. *Hylotelephium x hybridum* 'Rosy Glow' (formerly *Sedum*)
5. *H. spectabile* 'Indian Chief' (formerly *Sedum*)
6. *Lilium x hybridum* 'Salmon'
7. *Nepeta x faassenii* 'Six Hills Giant'
8. *Thymus sp.*

Borderline Hardy Perennials.

Based on the data collected from plantings during 1998-2000 only, the following perennials were found to have minimal survival, i.e. 1%-50% survival in both Z3/4 and Z4 (unless otherwise noted). As such, we are classifying these as borderline winter hardy perennials. With this low winter survival rating, gardeners would be advised to purchase more than one plant of each cultivar and to mulch for winter survival. **Most likely these will perform as annuals in the north.**

1. *Agastache mexicana* 'Mauve Beauty'
2. *A. rugosa* 'Honey Bee Blue'
3. *Campanula carpatica* 'Chettle Charm'
4. *Dianthus carthusianorum*
5. *Geranium sp.* 'Appleblossom'
6. *G. sp.* 'Rozanne'
7. *Heliopsis helianthoides* 'Bressingham Double'
8. *Hemerocallis x hybridus* 'Lady Lucille'
9. *H. x hybridus* 'Miss Victoria'
10. *Heuchera x hybrida* 'Brandon Pink'

11. *H. x hybridum* 'Mohrchen' (formerly *Sedum*)
12. *H. x hybridum* 'Robustrum' (= 'Ruby Glow')
13. *H. x hybridum* 'Vera Jameson'
14. *H. x hybridum variegata*
15. *H. sp.*
16. *Lilium x hybridum* 'Spotted Yellow'
17. *L. x hybridum* 'Orange'
18. *Perovskia abrotanoides* 'Filigran'
19. *P. abrotanoides* 'Longin'
20. *P. scrophulariifolia* 'Superba'
21. *Phlox carolina* 'Miss Lingard'
22. *P. maculata* 'Eva Cullum'
23. *P. maculata* 'Miss Wilma'
24. *Stachys byzantina* 'Cotton Ball'
25. *S. byzantina* 'Silver Carpet'

Non-hardy Herbaceous Perennials.

The following perennials (**planted during 1998-2000 only**) were found to be non-hardy (0% survival) in at least one site (Z3/4 and/or Z4). If cultivars were hardy in one zone but not the other, the zone in which they were not hardy (0% survival) is listed after each name. These should be treated as annuals in northern gardens and not as perennials that can be expected to survive the winter.

1. *Achillea millefolium*
2. *Agastache barberi* 'Firebird'
3. *A. barberi* 'Tuti-Fruti'
4. *A. rugosa* 'Honey Bee White'
5. *A. rupestris* 'Apricot Surprise'
6. *A. rupestris* 'Pink Panther'
7. *A. rupestris* 'Snow Spike'
8. *Alstroemeria x hybrida* 'Sweet Laura'
9. *A. x hybrida* Jazze 'Deep Rose'
10. *A. x hybrida* Jazze 'Purple Rose'
11. *A. x hybrida* Jazze 'Rose Frost'
12. *A. x hybrida* Princess Lily 'Angela'
13. *A. x hybrida* Princess Lily 'Daniela'
14. *A. x hybrida* Princess Lily 'Marilene'
15. *A. x hybrida* Princess Lily 'Monica'
16. *A. x hybrida* Princess Lily 'Oxana'
17. *A. x hybrida* Princess Lily 'Ragna'
18. *A. x hybrida* Princess Lily 'Sissi'
19. *A. x hybrida* Princess Lily 'Stephanie'
20. *A. x hybrida* Princess Lily 'Zsa Zsa'
21. *Artemisia lactiflora* 'Guizho'
22. *A. sp.* 'Huntington' Z3/4
23. *A. stelleriana* 'Silver Brocade'
24. *Asclepias curassavica*

25. *A. incarnata*
26. *A. incarnata* 'Ice Ballet'
27. *A. tuberosa* 'Hello Yellow'
28. *Aster nova-angliae* 'Alma Potchke'
29. *Baptisia lacteal (leucantha)* Z3/4
30. *Carex buchananii*
31. *Centaurea montana*
32. *Coreopsis grandiflora* 'Early Sunrise' Z3/4
33. *C. sp.*
34. *Corydalis wilsonii* Unnamed releases (15404-15408)
35. *Dianthus chinensis* Bouquet Purple' Z4
36. *Dicentra eximia* 'Adrian Bloom'
37. *Digitalis lantana*
38. *D. x mertonensis*
39. *D. purpurea* 'Alba'
40. *Echinacea sp.* (purple), (white)
41. *E. pallida (=paradoxa)* Z3/4
42. *E. purpurea* 'Bravado' Z3/4
43. *Erigeron sp.* 'Prosperity' Z3/4
44. *E. sp.* 'Sapphire Blue' Z3/4
45. *Euphorbia x martinii*
46. *Gaura lindheimeri* 'Blushing Butterflies'
47. *G. lindheimeri* 'Corrie's Gold'
48. *G. lindheimeri* 'Crimson Butterflies'
49. *G. lindheimeri* 'Daphne' (or Dauphine)
50. *G. lindheimeri* 'Siskiyou Pink'
51. *G. lindheimeri* 'Sunny Butterflies'
52. *G. lindheimeri* 'Whirling Butterflies'
53. *Geranium x cantabrigiense* 'Patricia'
54. *G. x oxonianum* 'Claridge Druce'
55. *G. x oxonianum* 'A.T. Johnson'
56. *G. sp.* 'Bressingham Purple'
57. *G. sp.* 'Bressingham's Delight'
58. *Helenium autumnale* 'Coppelia'
59. *Helianthemum x hybridum* 'Henfield Brilliant'
60. *Helleborus niger*
61. *H. odoratus*
62. *Heuchera x hybrida* 'Autumn Haze'
63. *H. x hybrida* 'Champagne Bubbles'
64. *H. x hybrida* 'Crimson Curls'
65. *H. x hybrida* 'Green Spice'
66. *H. x hybrida* 'Harmonic Convergence' Z4
67. *H. x hybrida* 'Rosemary Bloom' Z4
68. *H. x hybrida* 'Strawberry Candy'
69. *H. x hybrida* 'Veil of Passion'
70. *H. x hybrida* 'Velvet Night'

71. *H. sanguinea* 'Bressingham Hybrid'
72. *x Heucherella hybrida* 'Burnished Bronze'
73. *x Heucherella hybrida* 'Cinnamon Bear'
74. *x Heucherella hybrida* 'Kimono'
75. *x Heucherella hybrida* 'Quicksilver' Z4
76. *x Heucherella hybrida* 'Silver Streak'
77. *x Heucherella hybrida* 'Viking Ship' Z3/4
78. *Hylotelephium x hybridum* 'Larinem Park' Z4
79. *Kniphofia sp.* 'Bressingham Comet'
26. *K. sp.* 'Cobra' Z4
80. *K. sp.* 'Shining Sceptre'
81. *Lavandula angustifolia* 'Lavender Lady' Z4
82. *Persicaria amplexicaule* 'Taurus' Z4
83. *Persicaria bistorta*
84. *Phlox maculata* 'Franz Schubert'
85. *P. maculata* 'Miss Karen'
86. *P. maculata* 'Natasha'
87. *P. maculata* 'Shortwood'
88. *P. pilosa* 'Eco Happy Traveler'
89. *Polemonium caeruleum* 'Brise d'Anjou'
90. *Rudbeckia sp.* Z4
91. *Salvia greggii* 'Desert Blaze'
92. *S. pratensis* (=haematodes) 'Indigo'
93. *S. nemorosa* 'East Friesland' Z3/4
- 94. *Scabiosa columbaria* 'Butterfly Blue' 2000 Perennial of the Year**
95. *Tiarella x hybrida* 'Crow Feather'
96. *T. x hybrida* 'Mint Chocolate'
97. *T. x hybrida* 'Ninja'
98. *T. x hybrida* 'Tiger Stripe'
99. *Veronica x hybrida* 'Blue Bouquet' Z4

Consult the following summary table to determine the performance of the herbaceous perennials of interest to you. Data from 2002 will either further substantiate or modify the recommendations made above.

Please feel free to visit the testing sites during the 2002 growing season!

Legend for Tables.

Sources of Perennials.

AOP=American Ornamental Perennials

BB=Blooms of Bressingham

BIB=Blue Bird Nursery

BIN=Blooming Nursery

BN=Bailey Nursery

BP=Bluestone Perennials

BSC=Ball Seed Co.

GL=Green Leaf Enterprises

H=Heronswood Nursery

HC=Horticulture Club, University of Minnesota

NC=North Creek Nurseries

NG=Niche Gardens

PAS=PanAmerican Seed Co.

PPP=Pride of Place Plants

SG=Skagit Gardens

SN=Siskiyou Nursery

SO=Shady Oaks Nursery

T&M=Thompson & Morgan

TN=Terra Nova

UCT=University of Connecticut

VB=van Bourgondien

WFF=White Flower Farm

WG=Walters Garden